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ScienceDirect

Procedia Social and Behavioral Sciences 5 (2010) 875–881

Procedia
Social and Behavioral Sciences

WCPCG-2010

Students' evaluations of different architectural styles

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Received January 4, 2010; revised January 20, 2010; accepted March 17, 2010

Abstract

This paper indicates how the quantitative analysis of architectural representations can be used to identify both dissimilarities and commonalities in individuals' construes of architecture. Particularly, this paper has focused on the image of different architectural styles and their interpretation by architecture students at different stages of architectural education. As shown in the paper, first year architecture students as new learners perceived examples differently than senior last year architecture students as pre-architects. These interpretations were investigated using multiple sorting techniques, with respondents asked to sort 21 examples of different architecture styles according to their own criteria.

Keywords: Architectural styles, architecture students, evaluation, multiple sorting techniques, perception.

1. Introduction

As hypothesized in this research, architects' distinctive attitudes most likely derive from shared values acquired during their education. If architects truly have different standards of appreciation from non-architects, it is then most likely that these different standards are acquired from the first periods of their architectural education through their last years of education. Actually this paper investigates particularly the differing interpretations of the students at the early stages of architectural education as new learners and the senior last year architecture students as professionals. It has been assumed that on account of their distinctive training and world-view, the senior last year students as professionals would tend to adhere to different representations of the architectural projects than those obvious for the new learner respondents.

Previous studies have strongly indicated the differences between respondents with different backgrounds, and specifically showed that architects differ from non-architects in their assessments of the built environment (Hubbard, 1996; Purcell *et al*, 1998; Jeffrey, *et al.*, 1999; Imamoglu, 2000; Gifford et al., 2000; Sakalli, 2007; Akalin et al., 2009; Akalin et al., 2010). Although the difference between architects and lay people has been the focus of great deal of research, any difference of appreciation between architects at different stages of their career

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doi:10.1016/j.sbspro.2010.07.202

(education, just after graduation and after some time practicing) has not been studied much. With regard to architectural preferences, it has frequently been proposed that the background (Healey, 1985) of individuals into a professional design community is significantly involved in their acquisition of a very different knowledge structure from that of non-experts. Nevertheless, it was anticipated that there would also be certain similarities between the perceptions of new learners and senior architects connected to social representations due to the relative interdependence of such representations. Thus, current study emphasizes the importance of utilizing an appropriate methodological framework for analyzing both the similarities and the dissimilarities between the perception of different individuals and groups according to their architecture education.

2. Method

Essentially the research focused on in-depth interviews (typically of 1-h duration) which examined respondents' interpretations of 21 public buildings composed of six late modernist, seven early modernist, three high tech, and five deconstructive designs. These 21 schemes built between the late 1990s and the early 2000s were selected from different building developments completed in different countries designed by different architects.

Respondents were 83 undergraduate students from the architecture department of a university in Turkey, who agreed to participate in the study. Of these respondents, 43 were new learners and 40 were from last year students (pre-architects). The samples in each group had a similar diverse distribution by gender: 48% of the respondents were male and 52% were female. The mean age of the respondents was 23 and the age range was between 18 and 27 years.

Before the case study, the style of each picture was identified. For that aim, two architectural historians voluntarily sorted the pictures, which are taken from different periodicals and categorized according to their styles. However, the questionnaire was carried out without the knowledge of style. In other words, the pictures were shown to the respondents in different order, not in the order of styles.

After a brief introduction, 21 architectural images were presented to the respondents one by one, in a different order for each participant and they were asked to categorize each contingent based upon their own notion. In simple terms, the respondents were asked to sort the 21 architectural stimuli into groups or categories of their own choice, (there were no restrictions on the number or types of sorts produced). The individuals were then asked to describe and name the separate groups they had formed, as well as the overall theme of their sort.

The questionnaire form consisted of two parts: the first part being concerned with personal background of the participants (class, age, gender, etc); and the second part consisting of asking for sorting the 21 architectural stimuli into groups or categories according to criteria of their own choice. The multidimensional analysis used in the research generally derives inter-stimulus distances from the aggregation of the responses of a sample of individuals who are asked to judge the similarities or differences between stimuli. Therefore this aggregation of individual responses into a single matrix invalidates inter-individual differences in the sample. This paper is in search of clarifying the applicability of these ideas in the study of architectural psychology, by demonstrating how the quantitative analysis of the architectural stimuli in social representations can be used to study evaluating different styles by means of architectural students within a framework that acknowledges the situation of individuals in architectural education process.

3. Results and Discussion

3.1. Textual analysis of architectural interpretation

The analysis investigated whether there were any common or essential concepts underlying the evaluations of 21 architectural stimuli (Institute of Modern Art, Town Hall Celebration, G University Library, House on the Gulf of Mexico, Berlin Mexico Embassy, Villa VPRO, Casa Rotonda, Publicis Drugstore, G Office Building, Wall House, Rosenthal, UFA Cinema Center, Ing Group Headquarters, Dancing House, Wozoco's Appartments, Flexible Housing UN Studio, 131 Rue Pelleport, Office building, City of Arts and Sciences, London City Hall, Mixed-use building) by examining the themes or types of sorts completed by the respondents.

The use of multidimensional scaling procedures facilitated the analysis of the pattern of similarity in building use among the respondents. A total of 415 sorts were completed by 83 respondents, all of which could be sorted into 11 categories according to topic similarity or general content. Particularly, it appeared that around 70 % of the pre-architects' sorts were concerned with abstract and evaluative judgments (e.g, impression, semantic, design style, structural impression, and design scale). On the other hand, new learners' sorts based on concrete and physical imagery (e.g., distinct appearance, form/ function relationship, details/materials, surroundings) appeared around 75%. This means that while the pre-architects' emphasis was on *subjective* values, the new learners stressed more on the *objective* values of the stimuli.

Figure 1.Riverwalk Kitakyushu, Japan

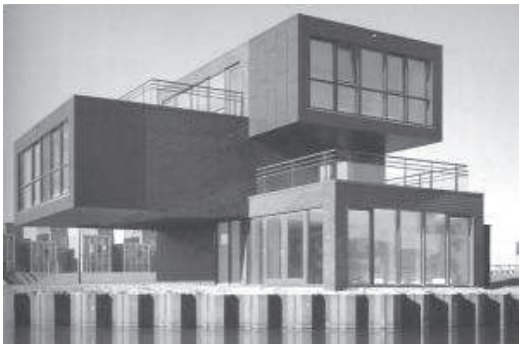


Figure 2.Gewild Wohnen Expo 2001, Flexible Housing

A 'classical non-Euclidean multidimensional scaling analysis was then performed on this data, with the two-dimensional solution explaining 94% of the variation in the data (STRESS=0.115). The resulting scalogram (Figure 3) graphically demonstrates the differences between individuals in their construes. In this plot, each point represents a respondent in the study, and the closer two people appear in the plot, the more similar they are in the criteria they utilized in their sorting. In other words, the further apart two respondents appear, the more dissimilar they are. In addition, it is not observed that there is a specific partition between respondent groups. However, the plot indicates that the new learners emphasized similar concerns in their interpretation of architecture, whereas the 40 senior architects were scattered far more widely, indicating a high level of heterogeneity amongst this group. This proposes that the pre-architects tended to utilize a more varied and idiosyncratic range of criteria for the interpretation of architecture than did the new learners.

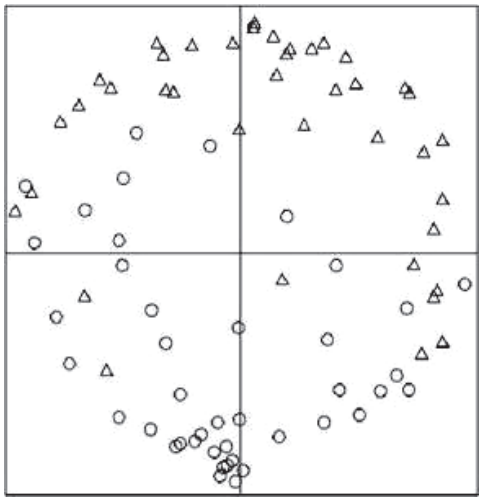


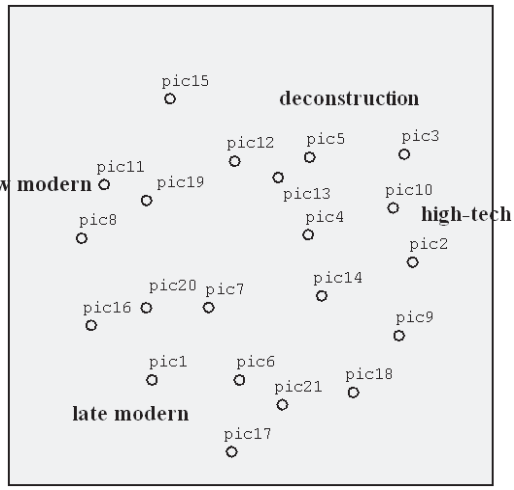
Figure 3. Multidimensional scalogram of building category use (O= 1.class, Δ= 4.class). The closer two individuals appear in this plot, the more similar they are in their use of building categories (STRESS= 0.115, r^2=94%).

3.2. Nonverbal analysis of architectural interpretation

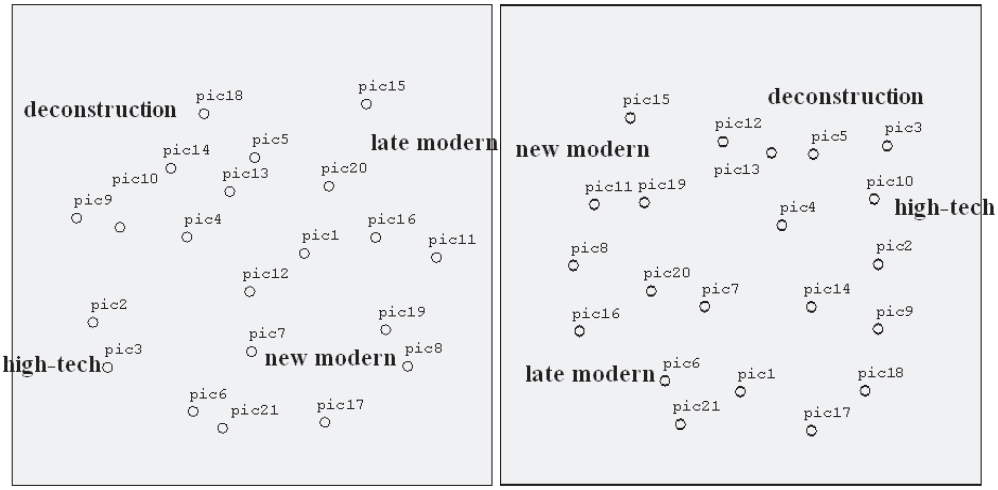
This stage of analysis observed the consequences of the sorting procedure in a nonverbal manner to examine how the architectural projects were sorted together regardless of sort type or description. The analysis was performed using INDSCAL (Individual Differences Scaling), supposing that subjects are methodically deforming a shared space in arriving at their assessments, seeking to reconstruct both individual spaces as well as an aggregate group space (Coxon, 1982). The procedure not only allows the comparison of groups by aggregating individual responses into a common group stimulus space, but also simplifies the examination of inter-individual differences by describing the variation of individuals against the shared reference point of the common mean space (Schiffman et al., 1985). This multiple sorting procedure lets the respondents express themselves using their own terms which are not restricted by the limitations of a structured rating format. As such, it is an exploratory research technique that respects the ability of individuals to formulate ways of thinking about their surroundings in their own terms (Canter et al., 1985).

The data input in this case consisted of 83 symmetrical data matrices, one for each of the respondents, demonstrating how many times each of the 21 buildings was sorted into a group with each of the other buildings. In the initial stage of analysis, in order to produce a single plot, INDSCAL was used to accumulate all of the data matrices effectively; the matrices were weighted to take account of the proportionate number of respondents interviewed. The resulting two-dimensional plot (Figure 4(a)), explaining 90% of the variation in the data, provides a graphic representation of the underlying relationship between 21 buildings (each building is shown here by its identifying number). In this plot, whatever its verbal description is, the buildings that were frequently placed together in a group appear closer together, whereas those between which have few similarities were drawn are further apart. Therefore, postulating the plot like a 'map' of how stimuli might be structured concerning the core concepts, images and ideas acquired from the 'average' respondent, this plot can basically be interpreted through the visual inspection of the configuration of points.

Lack of space precludes a detailed description of the resulting configuration, but, in general terms, it tended to indicate a division between the buildings to the right of the plot which were generally described as high-tech in style, and those which were described as late modern in style to the left below. Also while the buildings to the middle right of the plot which were usually characterized as deconstructive in style, the ones to the middle left of the plot were characterized as new modern in style. In addition, it could be essentially inferred that the relationship between distinctive types of architectural project around the plot reflects not only the similarities between each building and the one adjacent to it, but also differences between each building and the one opposite to it. For instance, Mixed-use Building (Building number 9) was extensively ideated as a deconstructive in style with high tech influences. It is especially interesting to compare this pattern to that revealed by Wilson and Canter (1990) in their study of the knowledge structures of trainee architects. Wherever a similar 'polarization' of different architectural styles was noted, particularly that the further away from the centre of the plot a building was, the more 'typical' an example of a particular style it was considered to be (Purcell & Nasar, 1992).



(a) all respondents



(b) first year students

(c) last year students

Figure 4. (a) Multidimensional scalogram of the relationship between the 21 architectural projects based on all sorts for all respondents. The plot indicates that the closer two architectural projects appear; the more frequently they are sorted together by the respondents. (STRESS=0.202, r2=90%). (b, c) Multidimensional scalograms of the relationship between the 21 architectural projects based on all sorts by new learners (STRESS= 0.201, r^2=90%) and senior architects (STRESS= 0.202, r^2=90%) respectively.

In addition, INDSCAL analysis of the sorting data was also investigated for the new learners and senior architects separately. These two-dimensional plots (Figure 4(b, c)) demonstrate slightly more explicative output than the aggregate plot, explaining 90% of the variation in each data, and showing high inter-individual agreement within these groups. The fact that the plot for each group explains same variation in the data suggests that as a group, they were both homogeneous in their thinking. Examination of these plots indicated that although there were some similarities between the two configurations, specifically in the close proximity of buildings 6, 17 and 21 (late modern examples), in other respects the plots appear quite different. Examining all three plots in Figure 4 together, one can begin to discern that the aggregate, seemingly consensual, plot is in fact a compromise which does not sufficiently depict the representation of either group. In this sense, the inter-group differences noticed in this study appear to be variations versus a set of common reference points, fortifying the notion that different social groups hold definite positions regarding shared social representations. However, a fundamental division between deconstructive, new modern, late modern and high tech styles appears in all three plots, suggesting that although the

groups classified and grouped the buildings differently, they sorted them according to a set of common ideas. Relating the plots to the preceding verbal analysis of the sorting data suggests an obvious interpretation of this discrepancy; namely that whilst the new learners were constructing their knowledge structures according to objective qualities of the architectural projects, the pre-architects were more reliant on concepts connotative values. The subtle spaces become abstract by experience. In addition, the process which began with the subtle fiction of architectural space perceived becomes existential space that can be mentally perceived and possesses cultural, political, social, economical and semantic dimensions (Norberg-Schulz, 1971). In this sense, while the interpretations of pre-architects appear obviously on connotative meaning, the others' are on denotative meaning in accordance with the other studies (Hershberger, 1969; Groat, 1982; Devlin, 1990; Downing, 1992). Thus, differences in the overall interpretation and conceptualization of the architectural projects between the two groups result from different aspects of the architectural representation as a fundamental factor.

Figure 5. 131 Rue Pelleport Frederic, Paris

Figure 6.Wozoco's Apartment, Amsterdam

4. Conclusion

The contribution of this study to the already affluent and varied literature on environmental aesthetics is how participants perceive environmental conditions with different backgrounds. The results outlined above provide empirical evidence at almost every stage of analysis for the existence of meaningfully different aesthetic attitudes between the pre-architects and new learners. In this respect, it can be concluded that although there may be a common interpretation of the architectural stimuli, the pre-architect participants were usually more subjective than those of the new learners. This finding supports the other related studies (e.g. Cuff, 1991; Downing, 1992, etc.) suggesting that there is greater similarity of aesthetic evaluation among professional designers than amongst the lay public, with 'value convergence' increasing over the course of professional education.

Architectural preferences are linked to the fact that both new learners and pre-architects based their knowledge of structures around different schemes. Although the study was not set out to explicitly examine this, late modern schemes were preferred by the new learners. However, there was not any specific style strongly stressed by the pre-architects. Such disagreements about the preceding debate on the nature of architectural representations can be connected to the special effects of socialization on the knowledge structures possessed by the pre-architects and the new learners respectively, with the influence of professional planning education process recognized as crucial in constructing knowledge structures among senior architects which were distinctive from those of the new learners.

Besides, it seems that some new learners had descriptions that were closer to the pre-architects than other individuals of the new learners in that it is likely that the preference of individuals while entering architectural

education is different. Their exposure to environmental factors (i.e. being already in this field because of their relatives or etc., periodical, media), proximity to architecture or individual concern in this field may be the most important factor underlying their representation and interpretation of architectural stimuli. Obviously, using INDSCAL technique, more studies relating architectural and environmental interpretations and preferences to person's social and educational backgrounds could be carried out to comprise a significant contribution to environmental psychology in the future.

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